and workmen in what was at that time the shop of Julius Andrae & Sons.

The school, humble in origin though it was, experienced an immediate and phenomenal growth. Within five years, its enrollment increased to 250 and by 1911 the student register numbered 450 —enough to necessitate removal to new and larger quarters. It was in that year that the school began occupying the Stroh building.

The whole concept of a technical institute was an innovation in this country. European schools of a similar type were in existence, but these were generally municipal schools, often established as projects to attract visitors. The technical institute as conceived by Mr. Werwath was an indication of his unusual foresight. He strove constantly to improve training techniques and to augment teaching facilities so that the growth of the school paralleled the expansion of the co-relative industries. He helped more than 34,000 technicians and engineers to build careers by offering them the kind of training that modern industry has demanded through the years.

Interest in Science

A deep interest in scientific advancement persevered throughout Mr. Werwath's entire lifetime. His name and the names of his colleagues are associated with a number of practical working devices that were "firsts" in scientific development. Among these was the wireless controlled Zeppelin demonstrated by Mr. Werwath on the twenty-fifth anniversary celebration of the Milwaukee Merchant and Manufacturers Association in 1911.

Other examples of Mr. Werwath's ingenuity in giving practical application to up-to-the-minute scientific findings were the storage batteries for automobile ignition that were built and sold by his students, the electric lighting plants which provided power for innumerable country homes and many of the small communities in the region, and the many electric machines, meters, switchboards, small generators, gasoline engines, and other electrical and mechanical appliances that were manufactured in the school shops and marketed to the public. Since the tuition paid by the students was usually too small to offset the expense of maintaining and constantly expanding the facilities of the school, the revenue obtained by the sale of appliances was often used for this purpose. In this way the electrical laboratories and work shops of the school were continually improved.

Manufacturing as a part of the school's program ended with the conclusion of the pioneering era and gave way in later years to the active interest of Mr. Werwath and his colleagues in applied research.

Fostered Radio Station

Through the years, Mr. Werwath always showed a youthful enthusiasm for scientific developments. In the 1920's when radio was the wonder of the day, he fostered MSOE's first professional radio station, WIAO. In 1925 the call letters were changed to WSOE and later this station was to become WISN. Similarly, in the 1930's, Mr. Werwath organized an electrical demonstration as an outgrowth of the school's electrical experiments. This demonstration traveled throughout Wisconsin, Illinois, Michigan, Iowa, and Minnesota and was also featured at the World's Fair in Chicago in 1934.

A further illustration of Mr. Werwath's desire to keep apace with science especially in its practical applications, was his establishment of the Milwaukee School of Engineering Industrial Research Institute in 1933. This is a facility in which the school offers the use of its laboratories and research staff to industries for the purpose of assisting manufacturers in discovering new and better methods of production. Since its inception, the Institute has furthered innumerable industrial developments.

Alert to Progress

Formal studies in the Milwaukee School of Engineering have always been ordered to the current and growing needs of industry. This was possible only be-

of MSOE, Stutsman was employed as an instructor in the Institute. He worked subsequently in air conditioning application for the York-Wagner Company.

Clement J. Purtell, formerly an instructor in mechanics, has become an instructor in refrigeration. A Marquette graduate with a B.S. degree in mechanical engineering, Purtell was previously a mechanical designer with the Nordberg Manufacturing Company, Milwaukee. He also worked as a refrigeration engineer for the Vilter Manufacturing Company, Milwaukee.

Television Added to Radio Curriculum

A new eighteen-months course to prepare radio and television technicians has been announced by Fred J. Van Zeeland, director of MSOE's College of Electrical Engineering. This course will replace the one-year radio technician curriculum previously offered at the school.

Among the new subjects featured in the new program are the servicing of AM, FM and television receivers, the operating of AM, FM and television transmitters, control room and studio procedures, and ultra-high frequency techniques.

The study in transmitters will prepare the student for the Federal Communications Commission examination for the commercial license which is required to operate a broadcasting station under government regulations.

The new course will prepare directly for these job objectives: television serviceman, radio serviceman, radio and television retailer, supervisor in radio and television assembly, radio and television tester, broadcast radio-operator, police, taxicab and railroad transmitter operator, and police, taxicab and railroad receiver serviceman.

Upon completing the radio and television technician course, students may continue their education at MSOE for two additional years to obtain the bachelor of science degree in electrical engineering with a major in electronics.

A Preview of Video

"Television is already giving radio some serious competition, and promises more for, 'ready or not' it has started to roll and is not holding up for anyone." So says the advertising agency of Lennen and Mitchell, Inc., of New York, in a study recently completed on "Current Television Facilities, Programs and Audience." Television, the agency states, is fast heading toward the status of a $6,000,000,000-a-year industry, four times the size of radio.

Lennen and Mitchell estimate that the cost of developing television will run to $8,000,000,000 in the next several years for stations and sets alone. This does not include program costs, which the industry hopes advertisers will assume.

Eighty million dollars of the above total represents the cost of constructing the allocated number of stations permitted by the Federal Communications Commission.

—RADIO-ELECTRONICS, October, 1948.